

03050109-190

(*Saluda River/Lake Murray*)

General Description

Watershed 03050109-190 is located in Newberry, Saluda, Lexington, and Richland Counties and consists primarily of the *Saluda River* and its tributaries from the *Lake Murray* headwaters to the dam. The watershed occupies 129,981 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Tatum-Georgeville-Herndon-Lakeland series. The erodibility of the soil (K) averages 0.28 and the slope of the terrain averages 7%, with a range of 2-25%. Land use/land cover in the watershed includes: 54.3% forested land, 29.1% water, 11.7% agricultural land, 3.1% urban land, 1.1% forested wetland (swamp), 0.6% barren land, and 0.1% nonforested wetland (marsh).

The Saluda River watershed and the Little Saluda River watershed merge to form the headwaters of Lake Murray. Spring Creek, Hawleek Creek, Rocky Creek (Whetstone Creek), and Buffalo Creek flow into the waters of upper Lake Murray. Camping Creek (Susannah Branch, Snap Branch), Stevens Creek (Millers Branch), and Bear Creek (Rocky Branch, Stinking Creek) enter midlake on the northern shore, and the Hollow Creek watershed, Horse Creek (Little Horse Creek), Little Hollow Creek, Beaverdam Creek, Rocky Creek (Clemons Branch), Beech Creek, and Twentymile Creek enter midlake on the southern shore of the lake. Eighteenmile Creek drains into the lake near the dam. Lake Murray is owned and operated by SCE&G Company and is used for power production, recreation, and water supply. Billy Dreher State Park, located midlake on Billy Dreher Island is another natural resource in the watershed. There are a total of 71.5 stream miles (tributaries of Lake Murray) and 39,363.2 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
S-279	P/W	FW	LAKE MURRAY AT MARKER 63
S-211	S/W	FW	LAKE MURRAY, HOLLANDS LANDING OFF S-36-26
S-212	S/W	FW	LAKE MURRAY, MACEDONIA LANDING AT END OF S-36-26
S-290	P/W	FW	CAMPING CREEK S-36-202 BELOW GA PACIFIC
S-213	S/W	FW	LAKE MURRAY AT S-36-15
S-280	P/W	FW	LAKE MURRAY AT MARKER 102
RL-01023	RL01	FW	LAKE MURRAY 9.3 MI N OF GILBETT, 0.75 MI NNE FROM END OF S-32-443
S-273	P/SPRP	FW	LAKE MURRAY AT MARKER 166
S-274	P/W	FW	LAKE MURRAY AT MARKER 143
CL-083	INT	FW	LAKE MURRAY FOREBAY EQUIDISTANT FROM DAM AND SHORELINES
S-204	P/W	FW	LAKE MURRAY AT DAM AT SPILLWAY (MARKER 1)

Lake Murray - Lake Murray is a 51,000-acre impoundment on the Saluda River, with a maximum depth of approximately 189.6 feet and an average depth of approximately 41.3 feet. The lake's watershed comprises 1,193.2 square miles. There are ten SCDHEC monitoring sites along the main body of Lake Murray. At the furthest uplake site (**S-279**), aquatic life uses are not supported due to pH and total phosphorus excursions, compounded by a significant increasing trend in total phosphorus concentration. In sediment, high concentrations of chromium, copper, lead, nickel, and zinc were measured in 1997, and

very high concentrations of chromium and cadmium were measured in 1998. Recreational uses are fully supported.

Prior to 2001, *S-211*, *S-212*, and *S-213* were secondary monitoring stations and sampling was intentionally biased towards periods with potentially low dissolved oxygen concentrations. Aquatic life uses are partially supported at *S-211* due to pH excursions. A significant increasing trend in dissolved oxygen concentration suggests improving conditions for this parameter. At *S-212*, aquatic life uses are partially supported due to pH excursions. In addition, there is a significant increasing trend in turbidity. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at both sites. Aquatic life and recreational uses are fully supported at *S-213*, and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter.

Aquatic life and recreational uses are fully supported at *S-280*; however, there is a significant decreasing trend in dissolved oxygen concentration. A very high concentration of chromium was measured in the 1998 sediment sample, and a very high concentration of cadmium was measured in the 1999 sample. A significant decreasing trend in turbidity suggests improving conditions for this parameter. Aquatic life and recreational uses are fully supported at *RL-01023*.

Aquatic life uses are fully supported at *S-273*. A very high concentration of cadmium was detected in the 1998 sediment sample, and high concentrations of copper and lead were measured in the 1997 sample. A significant decreasing trend in total nitrogen concentration suggests improving conditions for this parameter. Recreational uses are fully supported, and a significant decreasing trend in fecal coliform bacteria suggests improving conditions for this parameter.

At *S-274*, aquatic life uses are fully supported; however, there is a significant increasing trend in total phosphorus. Very high concentrations of cadmium and chromium were measured in the 1998 sediment sample. Recreational uses are fully supported, and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. Aquatic life uses are partially supported at *CI-083* due to pH excursions. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported at *S-204*, but there are significant increasing trends in pH and total phosphorus concentration. High concentrations of nickel, lead, and copper were measured in the 1997 sediment sample, high concentrations of nickel and copper, and a very high concentration of cadmium were measured in the 1998 sample, and a high concentration of copper was measured in 1999. Also in sediments, P,P'DDD was detected in the 1998 sample. A significant decreasing trend in turbidity suggests improving conditions for this parameter. Recreational uses are fully supported, and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Treatment for *Hydrilla* in selected areas of Lake Murray (84 acres) began in 1993 by SCDNR to reduce and/or remove *Hydrilla* in all areas affecting public access and use. In 1994, 980 acres were treated with herbicides, and 1,335 acres were treated in 1995, 1,098 acres in 1996, 182 acres in 1997, 148.5 acres in 1999, 673 acres in 2000, and 1,155 acres in 2001. In 2003, 64,500 sterile grass carp were added to the lake at a rate of 15 fish per vegetated acre. Better control is seen in the protected coves than in more open waters.

"No Discharge" Designation for Lake Murray

In May 2000, Lake Murray was designated a *No Discharge* lake for marine toilets due to the lake's role as a major water recreation area, a container of drinking water intakes, and as an area of increasingly intensive boating activities. The increasing number of houseboats and vessels moored and operated on the lake with marine toilets became a source of concern about potential degradation of the lake in the future. Federal and state law prohibits the discharge of untreated sewage into waters of the United States, but treated sewage from marine toilets previously has been permitted, provided it has undergone some treatment and disinfection. Because microorganisms can continue to thrive after rudimentary treatment by on-board marine toilets, discharges may be completely banned from such waterbodies to protect the public's health, safety, and welfare. Federal law allows states to completely ban discharges if it can be demonstrated that adequate and accessible pump out facilities are available. DHEC determined this to be the case with seven marinas around Lake Murray designated for treatment and disposal. The law banning discharges applies to large vessels with onboard toilets that previously were allowed to discharge treated wastes into the lake.

Camping Creek (S-290) - Aquatic life uses are fully supported, and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total suspended solids suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Groundwater Quality

<u>Well #</u>	<u>Class</u>	<u>Aquifer</u>	<u>Location</u>
AMB-072	GB	PIEDMONT BEDROCK	BALLENTINE
AMB-064	GB	PIEDMONT BEDROCK	LITTLE MOUNTAIN

NPDES Program

Active NPDES Facilities

RECEIVING STREAM

FACILITY NAME

PERMITTED FLOW @ PIPE (MGD)

CAMPING CREEK
NEWBERRY COUNTY W&SA/PLANT 2
PIPE #: 001 FLOW: 0.03

STEVENS CREEK
THE RICECHILD GROUP/MII-DERA
PIPE #: 001 FLOW: 0.0144

NPDES#

TYPE

COMMENT

SC0044741
MINOR DOMESTIC
PERMIT INACTIVATED 7/29/04
Eliminated to Newberry Co./Cannons
Creek WWTP in Broad River Basin.

SC0032042
MINOR DOMESTIC

Nonpoint Source Management Program

Land Disposal Activities

Land Applications

<i>LAND APPLICATION FACILITY NAME</i>	<i>PERMIT # TYPE</i>
SPRAY IRRIGATION NCW&SA/BEDFORD WAY	ND0062219 DOMESTIC
TILE FIELD AAA UTILITIES/MALLARD BAY SD.	ND0019640 DOMESTIC
TILEFIELD NCW&SA/NEWBERRY SHORES	ND0060577 DOMESTIC
SPRAYFIELD NEWBERRY COUNTY W&SA/PLT#3	ND0003085 DOMESTIC
LOW PRESSURE IRRIGATION SYSTEM CWS/SMALL WOODS ESTATES	ND0007994 DOMESTIC

Water Quantity

<i>WATER USER STREAM</i>	<i>REGULATED CAPACITY (MGD) PUMPING CAPACITY (MGD)</i>
CITY OF COLUMBIA	55.0
LAKE MURRAY	75.0
CITY OF WEST COLUMBIA	13.5
LAKE MURRAY	18.0

Growth Potential

This watershed contains portions of the Towns of Prosperity, Little Mountain, Chapin, Summit and Lake Murray. There is and will be continued growth in areas bordering and surrounding Lake Murray. The widening of U.S. 378 to four lanes has increased the expansion rate along the Lexington side of the lake. U.S. 76 runs along the opposite shoreline of the lake, as does a rail line. The widening of I-26 toward the Chapin/Pomaria Exit is encouraging growth on both sides of the interstate.

Residential development continues to grow within the lake region. The area around the dam is the most developed and has water and sewer. The Richland County portion of the lake is also well developed and has several residential subdivisions where water and sewer are available. This will facilitate continued development along the shoreline as well as development along US 378. The Central Midlands Regional Council of Government has completed a \$208 planning study, which includes population and growth projections for the area. S.C. 6 is undergoing a corridor study, and the portion crossing the dam (and the dam itself) will be widened.

The upper lake region in Newberry County is primarily rural: a few small subdivisions, some industry, and agricultural activities on a small scale. The Town of Prosperity is serviced by the Newberry County Water and Sewer Authority, which discharges into Bush River. Bush River continues to be limited in terms of assimilative capacity, and as such there has been discussion among various sewer

providers in the county for a larger regional facility, which would discharge within this watershed, as well as some discussion for a single entity water and sewer provider for the lower part of Newberry County.

Lake Murray, as the main water-based recreational resource in the region, draws millions of visitors annually to its numerous parks, recreational areas, and waterways. All aspects of growth surrounding Lake Murray (tourist industry, residential development, agricultural activities) are expected to continue.